DOCUMENT RESUME

ED 028 766 JC 690 117

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The Nature, Predictive Value, and Use of the American College Test at Ohlone College.

Pub Date [68]
Note-23p.
EDRS Price MF-$0.25 HC-$1.25
Descriptors-Academic Ability, *Achievement Tests, *Grade Prediction, *Grading, *Junior Colleges, *Predictive Measurement
Identifiers-*American College Test, California

The following topics concerning the American College Test (ACT) are treated, with an emphasis on the use of the ACT at Ohlone College: (1) an explanation of what ACT scores are, how they are interpreted, and where the ACT 'fits' in the spectrum of educational tests; (2) factors that can influence ACT scores; (3) the use of the ACT in the prediction of college success and the limitations of its use; (4) the value of ACT data for teachers, including percentage distributions of scores at selected community and 4-year colleges using the ACT; (5) implications for grading and a discussion of the relative values of absolute and relative academic standards; (6) the use of individual ACT scores to help understand the failing student; and (7) male and female ACT averages and differences. Also included is a brief explanation of the meaning of the correlation coefficient and its use in placement and prediction. (MC)

ED028766

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THE NATURE, PREDICTIVE VALUE, AND USE OF THE AMERICAN COLLEGE TEST AT OHLONE COLLEGE

JC 690 117

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APR 14 1969
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This paper was prepared for the

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What are ACT Scores?

Tests used by educational institutions cover a considerable variety of content. These tests can be arranged along a spectrum ranging from those which are strictly measures of outcomes of education to those which are most independent of specific instruction. Here is the spectrum and some examples.

Tests Most Dependent on Education	Examples
1. Subject Matter Proficiency	Teacher-made exams USAFI Achievement Tests
2. General Educational Development	Iowa Tests of Educ. Development Scholastic Aptitude Tests of CEEB American College Test (ACT)
3. Reading, Vocabulary, Arithmetic Reasoning	School and College Ability Tests (SC Ohio State Psychological (OSU)
4. Verbal Analogies; Number Series	American Council on Education (ACE)
5. Figure Series; Matrices	Parts of Differential Aptitude Tests Raven Progressive Matrices
6. Learning Samples	Semantic Test of Intelligence

Tests Least Dependent on Education

Some tests are "wide-band" test including more than one level of questions. For example, the Scholastic Aptitude test of the College Entrance Examination Board includes measures of both general abilities and achievement in relatively specifi subject areas.

The ACT, as you can see, is much closer to the upper end of the spectrum and is thus considered more of a measure of educational outcome (achievement) and less a measure of "culture free" intelligence. Lee Cronbach, an expert in this area, has this to say about the spectrum of tests,

> The functions of the tests at the two ends of the spectrum are different. Those toward the top are designed for cold-blooded prediction of future school success. One who has done poorly in past schooling is a bad bet for the future, no matter what his "intelligence" may be. Those who admit students to college or award college scholarships rarely take a chance on the student "who would succeed <u>if</u> he turned over a new leaf". <u>They prefer the test which deliberately handicaps the student who has had poor schooling or has taken little advantage of it</u>. On the other hand, the teacher or counselor working with a student wants to know what undeveloped resources he has. The mental test ought to locate undeveloped

> potential that novel treatment (teaching methods) may bring out. For this purpose tests which have a minimum of overlap with achievement will provide this information. Tests in the range of five and six on the spectrum are preferable when it is necessary to compare persons coming from different educational and cultural backgrounds. The more different the backgrounds, the farther toward six the test should be, unless a particular class requires some specific background. (3,p. 236)

The ACT represents a part of a shift in recent years away from tests designed to measure "mental ability" as distinct from achievement toward tests that maximize efficiency in the prediction of school success. The ACT is more of a test of achievement than a test of intelligence with its measure of "academic potential" in four subject areas and a composite score thought to be important for college success. The four areas are English, Mathematics, Social Studies, and Natural Science.

Scores in each of these areas and the composite score are reported in standard scores. A standard score is a score which has been transformed from the number of correct answers. The reason for transforming the scores is to equate the results of the various subtests by taking into account their relative difficulty, the number of questions and the range of individual differences. Thus a standard score of 20 indicates the same relative standing, on a national basis, on any of the ACT subtests or the composite score. ACT scores also reflect how consistently the test measures what it measures. In technical terminology, one standard score point is equal to the probable error of measurement. This means that if a student makes a standard score of 20, the odds are 1 out of 2 that his "true" score[1] is between 19 and 21. The chance his score is over 21 is 1 out of 4 and it is also 1 out of 4 that his score is below 19. (1, p. 65)

The interpretation of these scores is achieved by systematically comparing the scores of individuals or an entire institution with typical performances of selected freshmen groups. The comparisons are based on averages, standard deviations and percentile ranks of the entire classes of entering college freshmen. Some of these comparisons are discussed in another part of this paper.

[1]A "true" score would be the average score of a student who has taken the test an infinitely large number of times.

What Influences ACT Scores?

Variations in community averages of scholastic achievement test scores are associated with a variety of factors. On a test comparable to the ACT the region of the country is a correlate of test scores. Generally speaking scores are higher in the East, North, and Far West and lower in the South and South West. (10, p. 5)

Area of Residence	Percent of Freshmen Exceeding National Standard
New England	54
Middle Atlantic	60
East North Central	55
West North Central	57
South Atlantic	40
East South Central	32
West South Central	39
Mountain	52
Pacific	55
Territories	75

The size and location of the community is related to community average scores of high school seniors. Large metropolitan communities tend to have higher average scores than small rural communities. (2, p. 8) Within a large metropolitan area the suburban areas will usually make higher average scores than the central city or ghetto areas. The lower scores are correlated with higher percentages of minority students and students from lower socio-economic levels residing in the central cities.

As might be expected, the percentage of fathers in a community who are high school graduates is positively correlated with the average test scores of the high school seniors in those communities. (2, p. 8)

Perhaps less well known is the positive correlation between the percentage of state vs. local financial aid for education and the state-wide averages of scholastic achievement test scores. The greater the proportion the state contributes, the higher the averages. (2, p. 8)

Even such factors as the average educational expenditure per student and the number of books in public libraries per 1,000 of the population can add positively to the prediction of average scholastic test scores of high school seniors. (2, p. 8)

On an individual basis (vs. the community averages we have been discussing) a factor such as the IQ of parents, with their education and socio-economic status held constant, is associated with measured academic potential. (9, p. 11) Also positively correlated are education of parents, income of parents, occupation of father (5, p. 110) and as mentioned earlier, area of residence within a city.

In interpreting the average ACT scores of various colleges, many factors must be kept in mind. Probably the most important factor is the admissions policy. If admissions are based on high school grades or on test scores or a combination of both, this will drastically affect the average test scores. For example, the University of California tries to admit from the top one eighth of the graduating high school seniors and the State College system tries to admit from the top one third. That factors other than admission policies affect average test scores can be seen from the variation of average scores among state colleges and various campuses of the University (See Table I). In theory, California community colleges draw from the top one hundred percent. In fact, they draw a high proportion from the lower fifty percent.

The reputation of a college affects the type of student it attracts. Colleges with a reputation for having an exciting intellectual atmosphere as contrasted to a vocational orientation will probably attract academically more able students. Both lay and professional opinion are important in this respect. Both the opinions of a student's peer group and the opinions of his parents will influence his choice when problems of grades, money, and transportation are not dominant. The professional opinions of high school counselors and teachers can also exert an influence. Unfortunately many high school counselors urge their students to go to the university if they can, to the state college as a second choice, and to a local community college as a last resort.

In the case of community colleges their average ability test levels are in part a function of the ability levels and quality of education in the high schools from which they draw most of their students. Some high schools consistently send better prepared students to a community college than do others. Other variables which probably influence the choice of the potential community college student are the alternatives available in terms of distance to a four year institution and the cost of attendance at those institutions. Last, but not necessarily least, are the institutional relationships between the high school and the community college. This would include the aggressiveness of recruiting policies in working with high school counselors, principals, and teachers.

TABLE I

SELECTED COLLEGE ACT AVERAGES

	ACT Composite Mean	National** Percentile Rank Equivalent to Mean of College	Standard Deviation
National Sample of 329 Colleges (all types)	20.0	48	4.8
Community Colleges			
Ohlone ('67)	16.7	24	4.6
Psych. 1 Classes - Ohlone	18.4	35	4.17
Health Classes - Ohlone	16.9	25	4.64
Marin, Foothill, Contra Costa Sierra			
Diablo Valley, Santa Rosa	18.3	35	5.0
A Bay Area Community College	16.6	24	4.8
Seven Bay Area Community Colleges	17.9	32	4.8
State Colleges			
Three Calif. State Colleges	22.1	63	3.8
Calif. State College 'A'	22.5	67	3.5
Calif. State College 'B'	23.2	72	3.2
San Francisco State	21.0*	56	---
Chico State	19.5*	44	---
Long Beach State	19.9*	47	---
San Diego State	21.0*	56	---
San Fernando State	20.7*	52	---
Humboldt State	20.1*	49	---
Fresno State	19.8*	47	---
Sacramento State	20.1*	48	---
Universities			
U.C. Berkeley	25.3*	86	---
U.C. Davis	23.2*	72	---
U.C. Los Angeles	23.5*	75	---
U.C. Santa Barbara	22.9*	70	---
Stanford University	26.5*	91	---
Univ. of Santa Clara	24.8*	83	---
Univ. of Southern Cal.	24.2*	79	---
Calif. Inst. Tech.	28.2*	96	---
Univ. of San Francisco	22.2*	65	---
Univ. of Pacific	22.1*	64	---
Harvard University	27.5*	95	---
Mass. Inst. Tech.	28.2*	96	---
Princeton University	26.7*	92	---
Yale University	26.2*	90	---
Miscellaneous			
Golden Gate College	17.7*	31	---

*Predicted, not actual means.

**Based on 150,053 freshmen students from 329 colleges and universities. The percentile rank gives the percentage of cases equal to or below a given score on national norms.

What Do ACT Scores Predict?

One of the "laws" of educational psychology is that the "final" characteristics, including levels of achievement, of students undergoing an educational experience are more a function of "initial" characteristics than any other factor.

A special case of this "law" is involved in the ACT and high school GPA (grade point averages). On a national basis, but not at Ohlone College, high school GPA is the best single predictor of college GPA. ACT or a comparable test tends to be the second best single predictor. A combination of the two characteristics is a better predictor than either alone. This "law" does not deny that other factors such as quality of teaching, ability grouping, class size, teaching materials, etc., may also influence academic achievement; it does imply that on the average none of these factors is nearly as potent as the level of academic potential with which students enter a class. Notice also that the "law" does not predict the amount of learning (improvement or gain), only the final level of achievement. This achievement level is imperfectly indicated by letter grades.

At the national level using the Pearsonian correlation coefficient[1] as the measure of predictive efficiency, we find that high school GPA correlates .54 with college GPA. ACT correlates .48 with college GPA. Both factors combined correlate .60[2] with college GPA. At Ohlone College high school GPA correlates .22 with college GPA. ACT correlates .41 with Ohlone College GPA and both factors combined correlate .42[3] with Ohlone College GPA.

[1]See the explanatory note at the end of this paper for a discussion of the correlation coefficient.

[2]A correlation of this size would enable one to predict GPA plus or minus .61 of a grade point for two out of three students on the average. (For a predicted GPA of 2.5 the expected range would be 1.89 to 3.11.)

[3]A correlation of this size would enable one to predict GPA plus or minus .71 of a grade point for two out of three students on the average.

Of the five ACT subtests - English, math, social studies, natural science, and composite - scores in English correlate as high or higher with both high school and college grade point averages than any other score. Apparently a knowledge of English is the factor most important for success in school.

Other correlations are given below:

	ACT Subject tests Correlation with Ohlone overall GPA	High School Grades Correlation with Ohlone overall GPA
English	.39	.15
Math	.24	.09
Social Studies	.33	.17
Natural Science	.26	.15
Composite	.38	.21

ACT Composite - Psychology 1 grade r=.47
H.S. Grade Average - Psychology 1 grade r=.29
ACT and H.S. GPA - Psychology 1 grade r=.51 (multiple correlation)

ACT Composite - Health Ed. grade r=.44
H.S. Grade Average - Health Ed. grade r=.20
ACT and H.S. GPA - Health Ed. grade r=.44 (multiple correlation)

ACT Composite - overall GPA r=.41 (multiple correlation)
H.S. Grade Average - overall GPA r=.22 (multiple correlation)
ACT and H.S. GPA - overall GPA r=.42 (multiple correlation)

One might wonder about the relatively low correlations between high school GPA/ ACT test scores and grades at Ohlone College. While there is no hard data available, it is possible to speculate about the reasons for the relatively low correlations. As can be seen in the following list, many of the reasons are inherent in the nature of the community college. The possible reasons for the low correlation include:

1. Skewed distribution of ACT scores

   For a correlation coefficient to reach its maximum, both predictor and predicted scores must form the normal bell-shaped curve when arranged around the middle of a continuum of scores. While few colleges would have a perfectly normal distribution, Ohlone students' scores are probably more skewed toward the low end of the continuum.

2. Ambiguity of high school grades

   Students entering four year institutions have for the most part taken college prep courses where one standard of grading prevailed. Students entering community colleges are more apt to have taken college prep, vocational, and/or remedial courses where a variety of grading standards may have been used. Thus, the meaning of the grade point average of two students entering a community college may differ even though they are numerically the same. For a maximum correlation the high school grades would have to reflect a single continuous scale.

3. Ambiguity of Community College Grades

Grade point averages of community college students are more apt to reflect achievement in vocational-technical courses as well as in art, music, and drama where varied criteria of achievement may be used. Students attending a small community college may actually realize more of their potential (especially in the above-mentioned areas) than ACT scores would predict if these same people had attended a four-year institution because of more extensive and intensive opportunities for participation at the community college. If they receive an "A" for being a first string tackle, having a lead role in a play, or being first chair in the orchestra, they are in a sense "over achieving."

Adding to the ambiguity of community college grades is the fact that ACT scores do not measure the abilities required for success in many of the offerings of the community college. Important abilities not measured include: creativity, musical aptitude, artistic aptitude, aptitude for drama, mechanical aptitude, social judgment and skills, ability to work with ones hands, motivation, perserverance, and work habits.

In brief, grading in the community college tends to reflect the wide variety of opportunities to achieve as much as it does the patterns of abilities of those entering such an institution. For a maximum correlation college grades would have to reflect a single continuous scale.

4. Variations of grading standards among instructors

Aside from the variations in standards that exist among different classes, there are probably variations in grading standards among teachers teaching the same class. This is probably more true in new colleges and in those that use a large number of part-time staff. For a maximum correlation, teachers in the same course would have to use a single standard of grading.

5. Unique characteristics of community college students

Non-intellectual factors may play a more important role in community college grades than they do at a four-year institution. Assuming all or most of the students in any four-year institution were highly motivated and well organized in terms of time and study habits, then differences

in grades would be more a function of differences in intellectual ability. This situation is probably less characteristic of the community college than the four year institutions, thus decreasing the correlation between high school grades/ACT scores and community college grades.

Community college students may show a greater change in personal and academic functioning than students at four-year institutions. This is related to the "late bloomer" phenomena. A "late bloomer" is a student who has slid through high school without much academic motivation or realization of his goals and finds out in the community college who he is and where he is going and academically catches fire. Of course, "late blooming" can take various forms. This very phenomena on which the community college prides itself may be a factor in accounting for low correlations between high school and college grades.

6. Social Psychological Factors

Other highly speculative non-intellectual factors which may affect the relative differences in correlation between measures of abilities and college grades at a four-year institution and a community college are student morale and identification with educational goals.

Most studies of industrial productivity (4,6,7,8) and learning efficiency (11) have found that high morale is associated with high productivity and learning when the people involved identify with the goals of the institution or organization of which they are a part. If either morale or identification with the organizational goals decreases, efficiency tends to go down. In so far as these factors have a dominant effect on learning efficiency, the correlation between measures of ability and grades would be lowered.

Student morale and institutional identification are complex phenomena with many dimensions and determinants. Among the dimensions are a student's sense of satisfaction with respect to himself and his status, satisfaction with his family and living arrangements, satisfaction with the national and international situation, satisfaction with his ability to influence his own destiny by participating in decision making processes, satisfaction with his classes, satisfaction with his teachers, satisfaction with physical facilities,

satisfaction with the policies and practices of the administration and board of trustees. Satisfaction is a relative process. What's satisfying to one student is not satisfying to another; but common to all levels of satisfaction is the element of expectancy. Students come to college with various expectancies. If experience tends to meet expectation, then morale and identification will probably be high; if experience tends to fall short of expectation, then morale and identification will probably be low.

What expectations do students bring to college? During their high school years much encouragement is given to students to prepare for college. These exhortations come from the high schools, parents, and the mass media. The students are led to expect a big change from their high school experience. They are led to expect that (1) they will be more independent and on their own in running their affairs, (2) they will experience more intellectual and personal fredom, (3) they will better enjoy classes and activities relevant to their needs, (4) they will be trusted and respected, and (5) these things will take place in an exciting intellectual atmosphere. If these expectancies are not realized, then low morale or failure of identification may follow. In addition, if community college students perceive that students at four-year institutions are faring better than they are in these respects, they may experience a kind of relative deprivation with the possibility of lowered morale and lowered institutional identification.

If students become demoralized and dissatisfied in this way but maintain some identification with institutional goals, they may psychologically withdraw from college and attend classes to "just get through", but without real involvement in the process. In a word, these are the alienated students who may graduate without realizing many of their potentials. These students would lower the correlation between "academic potential" and achievement as measured by grades.

On the other hand, if students maintained their morale and enthusiasm but rejected the goals of the college, they may form informal groups or subcultures with values and goals more closely related to their needs. In a word, these are apt to be the re-

bellious students who may or may not graduate but who realize other than "academic potentials". If these students become preoccupied with too many non-curricular activities, they too would fail to realize their "academic potentials" and lower the correlation between "academic potential" and achievement.

Of course these two outcomes do not exhaust the possible modes of adjustment.

Of What Values are ACT Scores to Teachers?

Two possible uses of ACT scores suggest themselves. First, college averages will give some perspective on the academic potential of junior college students in general and Ohlone College students in particular among institutions of higher learning. This perspective may have implications for grading practices. Second, test scores can provide a source of information about individual students which will aid in their being placed in classes where they have optimum chances of achievement or they may be used to find a possible clue to sources of academic difficulty.

As to the place of Ohlone students among other junior college students, it can be seen from Table II that Ohlone is slightly below the average of seven unidentified Bay Area junior colleges but is equal to or slightly above the students at "one Bay Area community college". This latter finding is somewhat unexpected since Ohlone is a new and unknown college with somewhat meager facilities and "one Bay Area community college" is a well established institution.

The ACT, in contrast to its use at four-year institutions, is not employed as a selective entrance test in the community colleges. It is utilized at this level as an achievement test battery to assist in the appropriate placement of students in academic and vocational classes.

Generally speaking, the Bay Area community colleges for whom average test scores are available fall in the lower one third on achievement level in comparison to a national sample of 150,000 students from 329 colleges and universities.

From Table I we saw that the state colleges in California tend to be near the national averages in predicted academic potential with State Colleges ~~colleges~~ A and B being above the average and Chico, Sacramento, Fresno, and Long Beach being slightly below. College B has the highest average of any of the state colleges for whom test scores are available.

TABLE II PERCENTAGE DISTRIBUTIONS OF ACT SCORES FOR SELECTED COMMUNITY COLLEGES

Standard Scores	English			Mathematics			Social Studies		
	One Bay Area Com. College	Ohlone College	7 Bay Area Com. Colleges	One Bay Area Com. College	Ohlone College	7 Bay Area Com. Colleges	One Bay Area Com. College	Ohlone College	7 Bay Area Com. Colleges
(33-36)	0	0	0	0	0	0	0	0	0
(29-32)	0	0	0	1	0	1	3	3	4
(25-28)	2	2	4	6	6	8	12	14	15
(21-24)	16	17	21	14	13	15	24	23	27
(17-20)	31	32	35	26	23	24	23	22	22
(13-16)	24	25	21	27	27	26	17	17	14
(9-12)	16	14	10	13	18	15	11	10	9
(5-8)	7	7	6	7	8	7	6	7	6
(1-4)	3	2	2	5	4	3	3	3	2
Mean	15.4	15.6	17.0	15.5	15.0	16.3	17.7	17.7	19.0
Standard Deviation[1]	5.4	5.2	5.1	6.0	5.9	6.0	6.5	6.5	6.3
Mean Percentile Equiv.[2]	19	20	28	26	24	31	34	34	44

Standard Scores	Natural Science			Composite		
	One Bay Area Com. College	Ohlone College	7 Bay Area Com. Colleges	One Bay Area Com. College	Ohlone College	7 Bay Area Com. Colleges
(33-36)	0	0	0	0	0	0
(29-32)	2	3	4	0	0	0
(25-28)	9	14	16	5	5	8
(21-24)	20	18	22	19	18	23
(17-20)	28	23	20	32	32	32
(13-16)	22	28	23	25	29	22
(9-12)	13	10	10	13	11	10
(5-8)	4	2	3	4	3	3
(1-4)	1	1	1	1	1	1
Mean	17.3	18.1	19.0	16.6	16.7	17.9
Standard Deviation[1]	5.6	5.7	6.0	4.8	4.6	4.8
Mean Percentile Equiv.[2]	30	34	40	24	24	32

[1] A measure of the deviation of scores from the average. Typically about 2/3 or all scores fall within a range of plus or minus one standard deviation from the average, e g., 15.4 plus or minus 5.3.

[2] The percentage of students of 150,000 students from 329 colleges and universities who make scores equal to or below the average of the community colleges.

TABLE III PERCENTAGE DISTRIBUTIONS OF ACT SCORES FOR SELECTED COLLEGES

Standard Scores	English				Mathematics				Social Studies			
	State College 'A'	State College 'B'	National Norms	Ohlone College	State College 'A'	State College 'B'	National Norms	Ohlone College	State College 'A'	State College 'B'	National Norms	Ohlone College
(33-36)	0	0	0	0	0	1	1	0	0	0	0	0
(29-32)	0	2	1	0	13	9	8	0	14	20	9	3
(25-28)	20	22	16	2	21	24	15	6	36	32	19	14
(21-24)	44	40	30	17	27	27	21	13	30	31	23	23
(17-20)	27	28	30	32	20	25	25	23	12	12	24	22
(13-16)	6	5	14	25	11	10	17	27	6	3	16	17
(9-12)	2	2	5	14	6	2	8	18	1	1	6	10
(5-8)	0	0	3	7	1	1	4	8	0	0	2	7
(1-4)	0	0	0	2	0	0	0	4	0	0	0	3
Mean	21.0	21.8	19.4	15.6	21.4	22.3	19.5	15.0	23.6	24.7	20.3	17.7
Standard Deviation[1]	3.5	3.5	5.0	5.2	5.8	5.0	6.3	5.9	4.4	4.0	5.8	6.5
Mean Percentile Equiv.[2]	60	66	47	20	62	68	51	24	69	75	50	34

Standard Scores	Natural Science				Composite			
	State College 'A'	State College 'B'	National Norms	Ohlone College	State College 'A'	State College 'B'	National Norms	Ohlone College
(33-36)	1	1	0	0	1	0	0	0
(29-32)	15	15	9	3	15	4	3	0
(25-28)	33	31	21	14	33	32	18	5
(21-24)	27	24	23	18	27	42	30	18
(17-20)	13	21	22	23	18	19	28	32
(13-16)	8	5	15	28	5	2	14	29
(9-12)	2	2	6	10	0	0	5	11
(5-8)	0	0	3	2	0	0	1	3
(1-4)	0	0	0	1	0	0	0	1
Mean	23.4	23.4	20.5	18.1	22.5	23.2	20.0	16.7
Standard Deviation	5.0	4.7	6.0	5.7	3.5	3.2	4.8	4.6
Mean Percentile Equiv.	65	65	49	34	67	72	48	24

3 Calif. State Colleges[3]

Score	Avg.	Stan. Dev
English	21.1	3.9
Math	21.9	5.7
Soc.Stud.	23.1	5.0
Nat.Sci.	22.8	5.4
Composite	22.1	3.8

[1] A measure of the deviation of scores from the average. Typically about 2/3 of all scores fall within a range of plus or minus one standard deviation from the average, e.g., 21.0 plus or minus 3.5.

[2] The percentage of students in the national normative sample of 150,000 students from 329 colleges and universities who make scores equal to or below the average of a college.

[3] Based on the national sample referred to in note two.

From Table III it can be seen that although State College B has the highest average scores, State College A has more high scores (16% compared to 4% above a composite score of 28) than College B. State College A also has more low potential students (5% compared to 2% of scores below a composite score of 17) than College B. The student body of College A is just more variable than College B.

No student whose composite score is below 13 will be admitted to College A or B or any other California State College. At least fifteen percent of Ohlone students would be denied an opportunity for college if these standards were applied at all colleges.

Other interesting comparisons can be made between Ohlone College students and those at Colleges A and B. The following table was constructed from the norms of those three institutions.

TABLE IV

OHLONE COLLEGE AND STATE COLLEGE COMPARISONS

Percent of Ohlone College freshmen who would exceed the mean at:

	English	Math	Soc.Sci.	Nat.Sci.	Composite
College A	13	15	20	21	11
College B	9	12	14	21	8

In all probability even Ohlone's best students will find considerable competition and challenge at both College A and College B.

From Table I it can be seen that the three largest universities in this area - Stanford, Berkeley, and Santa Clara - have predicted average scores in the top 17% on national norms with percentile equivalents of 91, 86 and 83 respectively. Other brances of the University of California tend to fall in the top thirty percent.

Implications for Grading

Three possible implications of ACT scores for grading practices are:

(1) Absolute Standards - If one had the grading philosophy that a given grade should have the same absolute meaning at any college, one could compare the expected distribution of grades (estimated from the national and local norms) with the actual distribution of grades to see if they were congruent.[1] If this were so "A's" and "B's" would be rare at Ohlone and the grade point differential between a student's average at Ohlone and at any other college or university would be near zero.

(2) Relative Standards - On the other hand if one had the philosophy that grades are relative to the college and to the students within a particular class then one would make a comparison of the distributions of students' ACT scores with the distributions of their grades. In this case one would anticipate that an average student's first quarter GPA at a state college would be between .25 and .50 below what it had been in the community college. At the university level this difference would be in range of .50 to .80. The average drop in GPA during the first quarter after transfer probably also reflects a problem in adjusting to the new demands of upper division work. These new demands include: stiffer competition, more independent thought and study required, longer and more difficult assignments, and more opportunities to become distracted. Community college transfers, matched in ability with native students at the four-year colleges, catch up and tend to do as well or better on the average than the native students by the end of their senior year.

(3) Test Scores are Irrelevant - One might have the philosophy that there should not necessarily be any systematic relationship between achievement test scores and grades. This might be the case in a class where the skills taught are not measured by the ACT, e.g., performance classes in art, music, or P.E. Another situation where there would probably be very little relationship between test scores and grades would be a class where the instructor conceived of grades solely as a measure of motivation rather than a measure of achievement.

[1]One would have to do this separately for transfer and non-transfer classes. Such data are not available at the present time.

ACT Scores and the Individual Student

At the community college there are many reasons why a student might be having difficulty in a class. Some of the possibilities include lack of innate learning ability (of which we have no measures), lack of basic academic skills or knowledge (reflected in ACT scores), lack of motivation, poor mental health, poor physical health, poor living or study conditions, lack of finances or a lack of knowledge of how to study. If you wish to understand why a student is failing in your class, possible clues might be found in his personnel folder in the Admissions Office. One useful source might be his ACT scores. Instructors at Ohlone have access to student folders.

Sex Differences in ACT Scores

As has been suspected we can see from Table V that the female students at Ohlone are better prepared in English than the males, whereas the male students are better prepared in mathematics than the females. In the fall of '67, 42 percent of the day students were females and the balance were - you guessed it - males.

TABLE V

MALE AND FEMALE AVERAGES OF ACT SCORES

	English	Math	Soc. Sci.	Nat. Sci.	Composite
Male	14.5	15.7	17.8	18.5	16.7
Percentile*	15th	28th	35th	37th	24th
Female	17.1	13.5	17.8	17.3	16.6
Percentile*	29th	17th	35th	30th	24th
Male and Female	15.6	15.0	17.8	18.1	16.7
Percentile*	20th	24th	35th	34th	24th

*Mean equivalent on national norms for 329 colleges and universities.

In terms of the ACT scores of those students who come to Ohlone College, it can be seen from Table V that relative to the national norms, our students are better prepared in social studies and natural science than in English and mathematics.

Note on the Correlation Coefficient

The correlation coefficient is a statistic which gives a measure of the extent to which two groups of scores vary together and in which two scores have been obtained for each individual in the group. In our case, the two scores are an A.C.T. score and a G.P.A. A correlation (r) of 1.00 would indicate a perfect systematic correspondence between the two sets of scores. The person with the highest test score would have the highest G.P.A.; the person with the average test score would have the average G.P.A.; the person with the lowest test score would have the lowest G.P.A., etc. The lowest possible correlation of .00 would indicate no systematic relationship between the two sets of scores. Two sets of test scores may also be negatively (inversely) related to each other up to a value of -1.00, also a perfect relationship which would permit errorless predictions. Although stated in decimal form, the correlation coefficient is not a percentage. If treated as a percentage, the correlation coefficient tends to overemphasize the significance of a relationship at all levels except zero and 1.00. The square of the coefficient gives the approximate proportion of variation in scores on a predicted variable that can be accounted for by scores from the predictor variable.

The meaning of a correlation of .50 would allow one to account for 25% of the variation of scores of a second variable, G.P.A., from a first variable, A.C.T. scores, as can be seen in the equation r^2 = proportion of variance accounted for or $.50^2 = .25$. This can be understood in terms of the rolling of dice in pairs. If you rolled twelve dice, recorded the total points, held three (25%) constant and rolled the remaining nine dice again, and recorded the total points of the nine dice plus the three held constant this would give you one pair of scores. If you repeat this procedure a large number of times and then correlate the pairs of scores, this would work out to a correlation about .50 on the average. If you repeated the entire procedure holding six (50%) dice constant on the second roll each time, it would work out to a correlation of about .70 ($.70^2 = .49$ or about 50%). If you repeated the entire procedure a third time and held ten (83%) dice constant on the second roll each time, the correlation coefficient derived would be about .91 ($.91^2 = .83$).

Holding no dice constant would give you a correlation of about .00. Holding twelve constant would give you a correlation of 1.00, since all pairs of scores will be identical. Correlating the scores of the numbers on top of

the dice with the numbers on the bottom of the dice for each roll would give you a correlation of exactly -1.00 because a one is opposed by a six, a two by a five, etc.

On the basis of past experience, the correlations of high school G.P.A. or ability test scores with first year college grade point averages tend to fall in the range of .45 to .60. If high school grades and/or test scores become the sole criteria for admission to college or to a class, many students are excluded who would succeed if admitted and many are admitted who fail or do poorly. In view of this lack of predictive accuracy, Ohlone College counselors are given considerable discretion in assigning students to particular classes. Placement in English and Math is more dependent upon A.C.T. scores, but even here discretion is allowed the counselor. In addition, instructors may initiate a course level change based upon student performance during the first few class meetings.

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